(19) World Intellectual Property Organization

International Bureau





(43) International Publication Date 10 November 2005 (10.11.2005) T (10) International Publication Number WO 2005/104690 A3

(51) International Patent Classification:

B05B 1/24 (2006.01) **F23D 11/44** (2006.01) **B05B 7/16** (2006.01) **F23D 14/66** (2006.01)

B05B 1/00 (2006.01)

(21) International Application Number:

PCT/US2005/012685

(22) International Filing Date: 14 April 2005 (14.04.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

60/562,717 16 April 2004 (16.04.2004) US

(71) Applicant and

(72) Inventor: MCNAUGHTON, Patrick, James [US/US]; 2550 Medicine Ridge Road, Plymouth, MN 55441 (US).

(74) Agents: PAIGE, James, J. et al.; Fredrikson & Byron, P.A., Suite 4000, 200 South Sixth Street, Minneapolis, MN 55402-1425 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,

CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- with amended claims

(88) Date of publication of the international search report:
4 May 2006

,

Date of publication of the amended claims: 15 June 2006

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: WINDSHIELD HEAT AND CLEAN

(57) Abstract: A washer fluid heater apparatus in embodiments of the invention may include one or more of the following features:
(a) a heat exchanger having a washer fluid inlet to allow washer fluid to enter the heat exchanger and a washer fluid outlet to allow the washer fluid to exit the heat exchanger; and (b) a coolant passage traversing through the heat exchanger having a coolant inlet and a coolant outlet, the coolant inlet and coolant outlet operably coupled to an engine's coolant system to allow passage of engine coolant through the heat exchanger.

